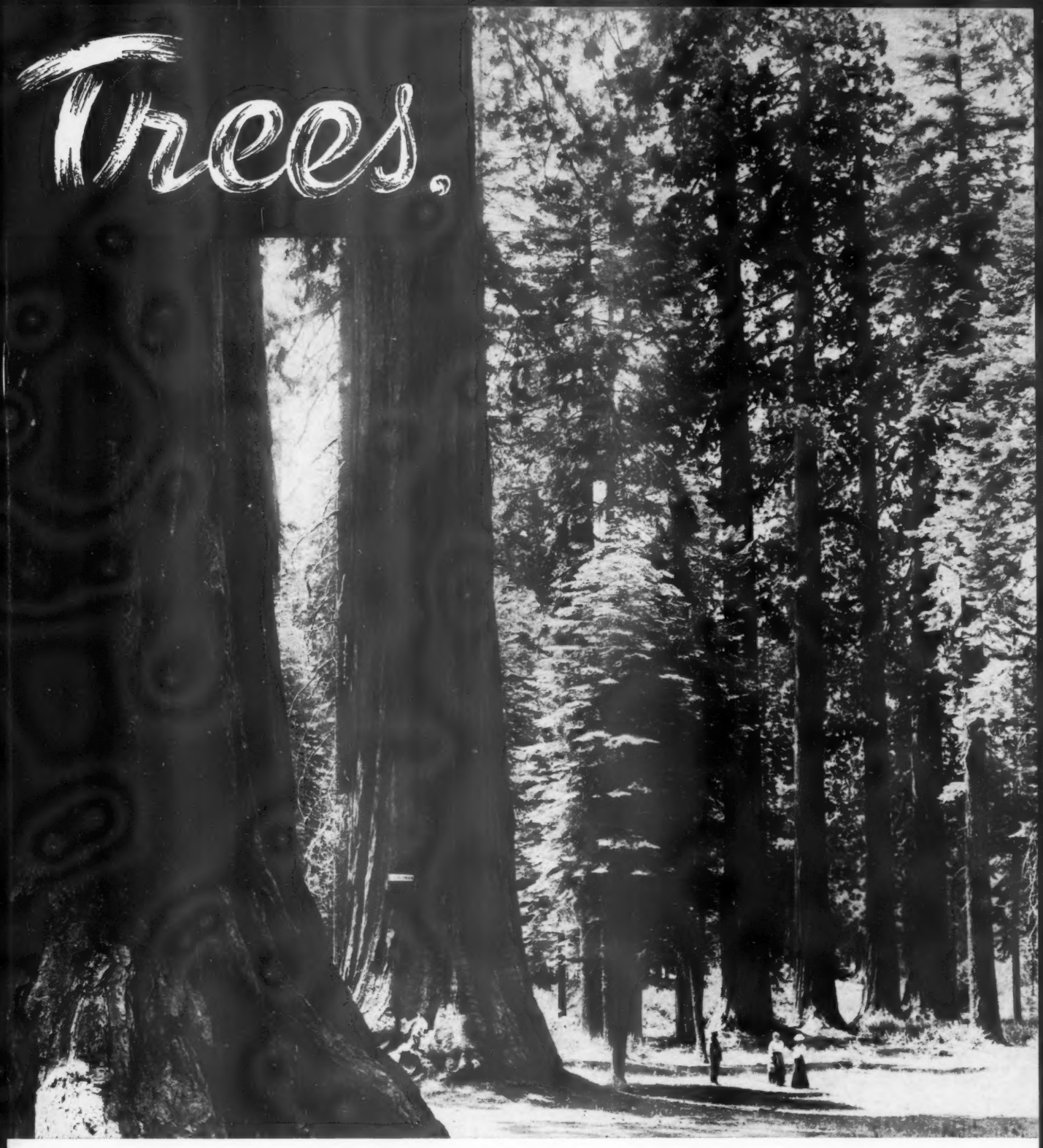
Trees.



The Grandest Tree On Earth—General Sherman Big Tree

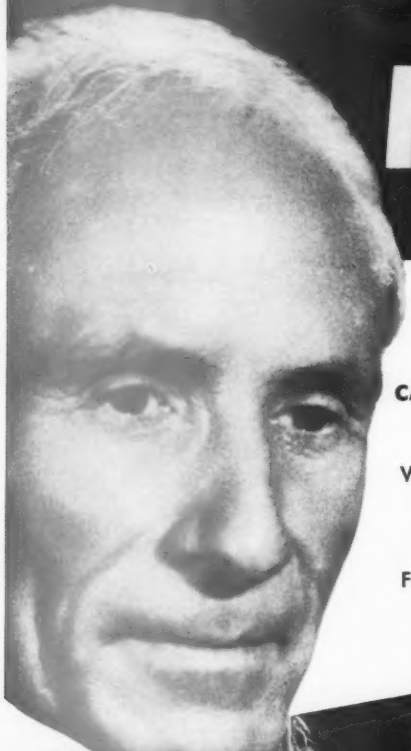
Silver Anniversary—National Shade Tree Conference—Baltimore, Aug. 22-26

DED Control Conference Report — ***O. N. Liming, et al***

Selection of Wilt-Resistant Mimosa Trees — ***E. Richard Toole***

May-June, 1949 *The Journal of American Arboriculture* Vol. 9—No. 4

"From then on, we bought McCULLOCHS"



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"We really gave our first McCulloch chain saw a work-out. We tested it on big trees, little trees, branches, hard wood, soft wood, palm, roots, knots, and angle cuts. We found the McCulloch cut faster, was easier to use and carry, and saved money on sharpening. From then on, we bought McCullochs. We've now got ten more like the first, and they're all the best saws we've ever used."

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ALONG THE WAY With . . . EDW. SCANLON

■ Look WHO'S LOOKING over this way FROM THE OTHER PAGE, good old RALPHIE THE PUCKETT. First time I'VE SEEN HIM in years. You're LOOKING GOOD BUTCH, drop me A LINE.
GREEN-up AMERICA

■ *And DON'T FORGET the SILVER ANNIVERSARY of the NATIONAL SHADE TREE CONFERENCE—Lord Baltimore Hotel, BALTIMORE, August 23-26. HOPE ITS HOT.*

■ FRANK HANBURY'S report for the EDUCATION COMMITTEE of the N.S.T.C. in the MAY ISSUE of the ARBORISTS NEWS is a honey. It is COMPREHENSIVE AND PRACTICAL and merits IMMEDIATE LAUNCHING — as FRANK alluz sez "IGNORANCE IS THE CHIEF ALLY OF TREE DISEASES." Right, we should have started to UNIGNORATE THE PUBLIC long ago, this would have FORCED TREEMEN to learn ABOUT TREES.

■ *Up goes CARL FENNER of Lansing, Michigan . . . Now he's ASSISTANT SUPERINTENDENT OF PARKS. The new title GIVEN IN RECOGNITION of the "CHEVROLET KID'S" outstanding work in HANDLING PERSONNEL, planting, spraying and LANDSCAPE WORK. Good going O'Fenner, YOU DESERVE IT.*

■ CHARLIE CRAWFORD reports BROOMING on young SOPHORA JAPONICA in TOLEDO. This was on TREES TO TWELVE YEARS OLD. He pruned back about 6" LAST YEAR early and the BROOMING DID NOT RE-APPEAR. The CAUSE OF THIS DISORDER should make an INTERESTING PROJECT FOR SOME AGENCY. The SCHOLAR TREE is a VALUABLE CITY TREE.

■ *WILLARD HAGEN sent a LONG LIST of the FINE TREES he is GROWING AT his ARCADIA, CALIFORNIA, nursery. He has a NICE LIST OF CHINESE BROADLEAFS that should be tried—also note he has IDAHO LOCUST—we JUST PLANTED TWO STREETS to them IN CLEVELAND. The flower is a BEAUTIFUL DEEP PINK, for this reason IT MERITS USE, it is also a SMALL TREE TO 25 FEET.*

■ Just to PROVE TO THE WORLD that DANA BOWERS did finally GET OUT OF CALIFORNIA to roam over the RUTTY COW TRAILS that they call THE OHIO HIGHWAY SYSTEM, the following PICTURE IS PUBLISHED. The pic was taken in front of MORTGAGE MANOR with THE EDITOR (right).

■ *DON'T KNOW WHY I keep sending out SOS'es HERE for various things—DO ANY of YOU GUYS ever READ THIS HOGWASH? Anyway, I ASKED NURSERYMEN to send me LISTINGS OF GOOD AND UNUSUAL TREES they HAVE FOR SALE. Forgot for a minute, WILLARD HAGEN sent a list OF HIS TREES, very good, too. LET'S HAVE some others.*

■ HERE'S SOMETHING for CITY FORESTERS, PARK SUPERS, or anyone interested in the CITY FORESTERS' SECTION of the NATIONAL SHADE TREE CONFERENCE (Baltimore, August 22-26). CHAD has asked "A-W" to act AS CHAIRMAN. I'd like to have the discussion center on 'SMALL TREES FOR CITY STREETS' —What say ye?

■ *If ye likee 'SMALL TREES' idea, how about EVERYONE BRINGING one or two KODACHROME 35-mm shots of a STREET OF SMALL TREES or an INDIVIDUAL SPECIMEN—with a PERSON STANDING in for scale. UPRIGHTS, GLOBE-HEADS, FLOWERING and COLORED trees should also BE INCLUDED. This can be a VALUABLE DISCUSSION with some HELP FROM INTERESTED PARTIES.*

■ DOES ANYONE KNOW where there is a LARGE OR MATURE SPECIMEN of RED LEAF WEEPING BEECH. I recently BOUGHT TWO small specimens, FIRST I HAVE EVER SEEN, but would LIKE TO GET a COLOR SHOT of a large one. It must MAKE A BEAUTIFUL TREE.

■ *We've had some COPIES OF TREES returned because NO CHANGE OF ADDRESS was sent to us. THIS DELAYS RECEIPT of the mag—so WHEN YOU MOVE, NOTIFY US.*

■ The OHIO SECTION of the NATIONAL SHADE TREE CONFERENCE will hold a SUMMER MEETING in CLEVELAND, JULY 1st. The SCENE OF THE CRIME will be the GARDEN CENTER at EAST BLVD. AND EUCLID. ARNOLD DAVIS, the host, will BREW UP some of his PALATE-PLEASING "JOE" and may even SING A BAR OR TWO.

■ *While WE ARE ON THE SUBJECT of meetings — The CONNECTICUT TREE PROTECTIVE ASSOCIATION will go in BRIDGEPORT, JULY 14th. Write JOHNNY WOODRUFF, the OSCAR WARNER CO., Waterbury, FOR DETAILS.*

■ Thanks for a NICE GESTURE by the MASSACHUSETTS ARBORISTS AND TREE WARDENS ASSOCIATION. They have AWARDED subscriptions to TREES MAGAZINE to FOUR OUTSTANDING students of ARBORICULTURE at the UNIVERSITY OF MASSACHUSETTS. TED MATHIEU, Ass't. Prof. of Arboriculture sent the following names: ALBERT L. COVER, Jamaica Plain; DONALD R. BATCHELDER, Weymouth; DONALD TOELKEN, Springfield; EDWARD H. COTTON, Florence. Congrats on your ACHIEVEMENTS, brethren!

GREEN-up AMERICA

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Vol. 9 Bi-Monthly No. 4

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The Editors of TREES invite discussions, comments and all types of literary materials pertaining to trees and tree preservation from any person engaged either in the scientific advancement or commercial development of the field.

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■ *Glad to see that HARRY E. NELSON, CITY COLLEGE OF SAN FRANCISCO, has OPENED THE DOOR for a campaign TO ESTABLISH NATIONAL ARBOR DAY IN CALIFORNIA. HARRY held the program THIS YEAR in conjunction with the CALIFORNIA SPRING BLOSSOM AND WILDFLOWER ASSOCIATION. They PLANTED TREES in a THREE-ACRE SITE set aside as a NATIVE GARDEN. Very good, now if the WESTERN SHADE TREE CONFERENCE will appoint a committee and GO TO WORK, we can soon add the GOLDEN STATE TO OUR N. A. D. LIST. Thanks, HARRY*

■ T. E. McSHERRY of the WESTERN MAINE FOREST NURSERY CO., Fryeburg, sure set me back; VERY PLEASANTLY, on my heels, with the announcement that MAINE HAD PASSED a "LAST FRIDAY IN APRIL" NATIONAL ARBOR DAY ACT. Full credit however was given to MRS. C. S. BEVERIDGE, GARDEN FEDERATION OF MAINE, AUGUSTA.

■ *We all know DUTCH ELM DISEASE as an INSIDIOUS KILLER OF TREES. The rapidity with which IT HAS SPREAD in the past several years makes it IMPERATIVE THAT FEDERAL MONEY be allocated to research that WILL ENABLE ARBORISTS to control more effectively ITS COSTLY CARNAGE. All readers should WRITE STRONG LETTERS TO CONGRESSMEN on DUTCH ELM DISEASE.*

■ IT WILL HELP if you MAKE EVERY EFFORT to buy TOOLS, EQUIPMENT and MATERIALS from the ADVERTISERS IN TREES. If YOUR SUPPLIER is NOT REPRESENTED, tell him TO GET ON THE BALL. It costs GOOD CASH DOUGH to publish THIS SHEET and the ADVERTISERS HAVE TO GET some encouragement to STAY WITH US.
GREEN-up AMERICA

May-June, 1949 **Journal of the National Arborist Association** Vol. 9—No. 4

EDWARD H. SCANLON, Editor
Box 5607, Cleveland, Ohio
Phone ORchard 0341

"No place is complete without trees. A home without trees is charmless; a road without trees is shadeless; a park without trees is purposeless; *a country without trees is hopeless*"

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Out on a Limb

SHALL WE TELL THE PUBLIC?

Very soon now a quarter century will have passed since the inception of the greatest movement in the betterment of shade and ornamental trees. History is full of the record man has made since the beginning of time to preserve and restore forest areas, but until the birth of the National Shade Tree Conference at Stamford, Conn., in 1924, no serious consideration had ever been given to the study of shade trees.

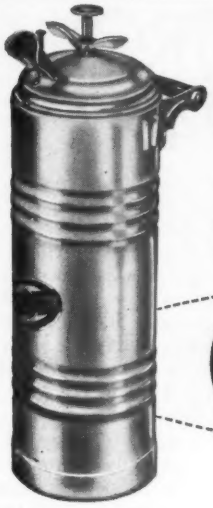
The history of this shade tree organization is a proud one. The names of the contributors of papers in its twenty years of printed proceedings is a Who's Who of the scientific and practical world of arboriculture. Its membership today numbers scientists and arborists from many remote corners of the globe. Its record is proud and untarnished and its members will meet this coming August in historic Baltimore to observe the Silver Anniversary of its founding.

The science of tree care has risen, as the founders visioned, to the status of an honored profession. Charlatans and just plain thieves still infest the communities of the land, but then the medical, legal and other professions have their black sheep, so this is not an unforgivable sin. Sincere efforts have been made to obtain legislation to control the activities of all people engaged in the care of trees, just as the medical and legal professions demand certain standards of professional and moral ethics from their members. Not too much success has crowned such efforts but the profession is young and the proponents should not be discouraged. Such things will come once the public has become better acquainted with the need.

A grand job has been done in conveying to the practicing arborist the latest methods in diagnosing and treating tree disorders. But, a great void is beginning to make itself apparent in the structure of arboriculture. The public knows little or nothing of trees. Actually few people know one tree from another. A simple point to prove this is the fact that, altho every arborist knows that certain trees, for example the silver maple and Chinese elm, are dangerous and useless when used on small city lots, the public, not having been apprised of the shortcomings of these species, as they should have been, still clamor for them. And there are plenty of people who will sell them even tho they know of the defects.

We should by all means begin a systematic presentation of tree facts to the public. The profession of arboriculture was nurtured on the expansive estates of a past era. The tree service of the future will come from the small home owner, but he must be introduced to the aristocrats of the tree world and he must be made conscious of the need for constant care that these good citizens require.

A careful, but not too long deferred, program of public education is a crying need and must be undertaken immediately. All conference members should awaken to this need and demand action.



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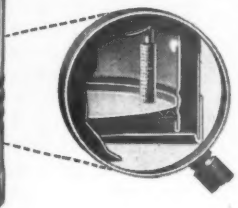

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Trees...

DUTCH ELM DISEASE CONTROL CONFERENCE REPORT—1949

A conference on Dutch elm disease control methods was sponsored by the New Jersey Department of Agriculture on February 17, 1949. The conference provided an opportunity for research and control personnel to discuss current research projects and data, and to determine needs for further tests. Sanitation, DDT sprays, and chemotherapy as Dutch elm disease control measures were discussed at length. Limited attention was given to resistant elms, laboratory diagnosis, and new insecticides.

Research and control workers from Connecticut, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, and Vermont; National Parks, U. S. Bureaus of Entomology and Plant Industry, and District of Columbia; City of Cleveland, Ohio; and Canadian Department of Agriculture and Quebec Department of Lands and Forests, were present.

The conferees agree that there is now sufficient information on DDT formulations and application techniques to justify qualified suggestions on the use of DDT as a Dutch elm disease control measure. This summary of conference reports is presented as a guide to tree wardens, arborists, and property owners facing Dutch elm disease control problems. The conferees urge that control operators recognize the possible inadequacies of DDT as a complete Dutch elm disease control weapon.

Bases for and Authorized Uses of This Joint Statement

This report is a consolidation of information already known or recently presented at the conference referred to in the Introduction, and was prepared by a Special Committee consisting of S. F. Potts, R. R. Whitten, B. H. Wilford, W. B. Becker, R. H. Plumb, J. G. Matthysse, E. G. Rex, and O. N. Liming, chairman.

In no instances should the statements made herein on methods of Dutch elm disease control be considered as recommendations for any specific type of work or material, or as the suggestions of any single State or Federal agency. The report may be used as such, or as a guide to specific recommendations, by interested parties who will assume all responsibilities for their statements.

Requests for reprints for general distribution should be directed to TREES Magazine.

Bases for Type and Amount of Dutch Elm Disease Control

The amount of the Dutch elm disease fungus, the bark beetle population, and the value of the elms which are threatened are three important factors in determining the need for, as well as the type and scope of practical Dutch elm disease control measures.

The threat to the elms in an area is largely in proportion to the amount of the Dutch elm disease-producing fungus *(Ceratostomella ulmi)* and to the number of the disease-carrying bark beetles *(Scolytus multistriatus* and *Hylurgopinus rufipes)* in and about the area. In areas where no control work is done, these menacing factors may build up to serious proportions in two to three years. Breakage by ice and wind, elm cutting operations, and other conditions which produce dead and dying elms contribute to high bark beetle populations. The coincidence of bark beetle emergence and high disease susceptibility of elms during spring growth, moist conditions which favor the sporulation of *C. ulmi,* and other conditions contribute to disease increases. Defoliated elms are more susceptible to the development of the Dutch elm disease than are undamaged elms. High disease and bark beetle intensification in adjoining wild areas increase the threat to valuable elms in the neighborhood.

In areas where elms are a minor part of the shade tree population, the cost of an area-wide control program may exceed the value of the elms. In areas with many valuable elms, as in many city and urban areas, the death of the elms would result in an irreplaceable loss and would require vast sums for their removal as a safety measure. The practicability of controlling the Dutch elm disease in such areas is self-evident.

Inasmuch as information on the amount and distribution of the Dutch elm disease in an area is essential to the initiation, as well as the continuation of a practical control program, there must be means for positive identification of the disease. The Dutch elm disease can be distinguished from other wilt diseases, and the Dutch elm disease fungus can be detected in dead wood, by laboratory tests only. Specimens from diseased wood and from bark beetle infested material must be cultured under conditions which favor the development and identification of *C. ulmi* if present. Suggestions on the types of samples to collect may be secured from the Dutch Elm Disease Identification Laboratory, U. S. Department of Agriculture, 503 Main Street, East Orange, N. J. The services of the Federal laboratory are available without charge to those engaged in Dutch elm disease research and control.

In known Dutch elm disease areas, dead and dying elm trees and elm wood should be destroyed as a bark bettle control measure, regardless of laboratory findings. The positive identification of *C. ulmi* is important only to knowing that the Dutch elm disease is present in an area and to keeping track of the progress of the disease.

Threatened or Lightly Infected Areas

In apparently *disease-free* areas threatened by invasion and in *lightly diseased* areas of valuable elms, control work which will prevent a build-up of the disease and its bark beetle carriers is highly recommended. Preventive measures should include such standard practices as spraying to prevent defoliation by leaf eating insects, pruning dead and broken branches from healthy elms, and removing dead trees to near ground level. Leaf feeders such as elm leaf beetles and their larvae, canker worms, gypsy moth larvae and Japanese beetles can be controlled with lead arsenate or with relatively small amounts of DDT applied just before feeding starts. Mist blowers have been found particularly effective in applying DDT for this purpose. Spraying and pruning as a rule improve the appearance and value of shade trees and may be justified whether or not Dutch elm disease is present.

The destruction or treatment of dead elms even though topped, and of recently cut or broken elm wood on the ground, is a most important Dutch elm disease control measure. Dead elm material that accumulates during the winter should be destroyed or treated by late April, and dead material that develops between April and September should be handled immediately. Piling untreated elm wood in dump areas may actually increase its menace as a Dutch elm disease source. Failure to destroy or treat dead elms, branches, cut wood, etc., on private property for example, will seriously reduce the effectiveness of good care of public trees.

Where burning of elm refuse is not practical, it may be sprayed with a 1% DDT water emulsion as described later, or with fuel oil containing 1% DDT. It is essential that all of the bark area, from the small branches to the exposed roots, be thoruoghly wet with the spray. Such sprays will kill bark beetles emerging from previously infested material as well as beetles coming to recently dead elm wood for egg laying. Winter sprays have not been found effective. Oil so-

lutions should be used only where injury to grass and other plants is not a factor.

Heavily Infected Areas

In areas where diseased trees and bark beetles are numerous, additional control measures may be required. In severely affected areas, it is more important than ever that recently dead and dying elm trees, branches, etc., regardless of the cause of the condition, be considered menaces and be burned or treated on time. Attention should be directed to the menace of untreated elm in wood piles and public dumps and to the folly of letting the trunks of large elms stand untreated until they produce bark beetles.

Valuable elms in heavy disease areas may be sprayed with DDT to prevent attack by bark beetle carriers of the Dutch elm disease. Because bark beetle feeding is difficult to control, and the control of feeding on a tree must be near perfect, special spray formulations and techniques are required. Such sprays plus the sanitation work to bring the Dutch elm disease under control, are expensive. But when serious Dutch elm disease conditions are overcome, the control work can be reduced largely to ordinary good shade tree care practices.

Tests have been made with chemicals applied to the soil around elms where the chemical may be taken up by the tree roots and distributed in the water-conducting parts of the tree. Oxyquinoline benzoate is the most promising of the materials tested. It will not cure diseased trees, but may prevent healthy elms from contracting the Dutch elm disease. Research is being continued on this disease control method, commonly referred to as chemotherapy.

DDT to Control Bark Beetle Feeding

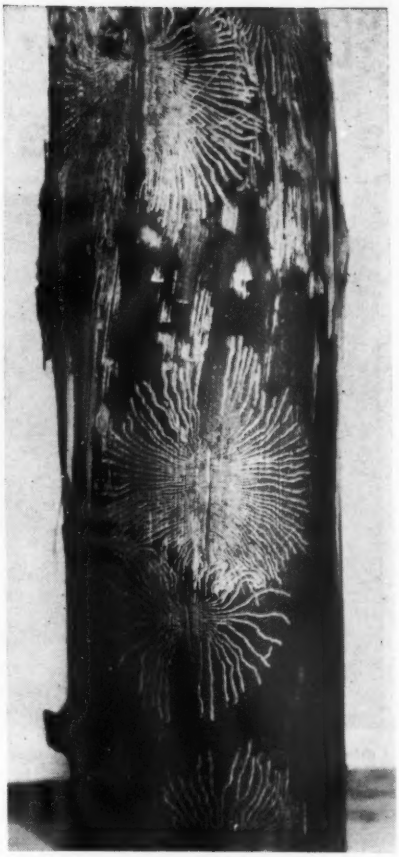
Tests have been made on many DDT formulations and on application techniques by which enough DDT can be applied to all parts of elm trees to prevent feeding by *S. multistriatus* and *H. rufipes*. To be effective, all twig crotches and the bark of branches and trunks should be covered with enough DDT to prevent bark beetle feeding for at least 60 days. The spray should not injure the elms nor other plants and animals which may be exposed to spray drift and drip. The cost of the spraying should be justified by the degree of protection and the value of the elms it protects.

DDT formulations containing different solvents, emulsifiers, and wetting agents as well as various amounts of DDT have been studied. Many commercial formulations have been tested, but the following suggestions are based on tests of specially formulated sprays. It is hoped that the formulations given herein will serve as guides to the making of suitable DDT concentrates which will be readily available to arborists, tree wardens, and property owners. Although the particular products tested are named in the following formulations, other solvents and emulsifiers, which will produce a concentrate with similar characteristics, should be acceptable. The responsibility for any variation in the effectiveness and safety of sprays made with so-called "equivalent" products should be borne by the manufacturer.

It is probable that the chances of injury to elms and other plants are increased in relation to the amount of DDT solvents in the spray applied by hydraulic equipment. For this reason it is suggested that concentrates containing large amounts of DDT be favored. For example, a 2% spray made from a 36% DDT concentrate is less likely to injure plants because it contains 1/3 less solvent than a 2% spray made from a 24% DDT concentrate. DDT may precipitate from the high concentrates held at low temperatures, but can be put back into solution by storing in a warm room and stirring just prior to its use. This can also be done by inserting a hot water coil into the mixture. Methods employing flames or which may produce sparks at or near the mixing site should be avoided.

Of course, other factors such as types of solvent, weather conditions, and plant variations may contribute to plant injury.

Of the various types of sprays tested, emulsions appear to be safer and longer lasting. When an emulsifier is added to a solution of DDT in xylol, benzol or other solvent, the product is known as an "emulsifiable concentrate." A given amount of this concentrate is then mixed with water in the spray tank to produce an emulsion containing the desired amount of DDT. DDT solutions without an emulsifier can be further diluted with additional solvents, but not with water. Wettable DDT contains a wetting agent which makes it possible to suspend small DDT particles (not in solution) in water in a spray tank.



Galleries of Scolytus multistriatus beetle in the cambium of an elm.

The following formulations have been found to be the best among the many tested:

Formulation A for *Hydraulic Sprayers*

DDT, technical grade	16 lbs.	39.0%
Benzol, industrial grade	9 qts.	39.5%
Velsicol, AR-50	4 qts.	19.0%
Triton, X-100	1 pt.	2.5%

These amounts will produce 4.6 gallons of concentrate, with about 3.5 lbs. DDT per gallon.

Formulation B for *Hydraulic Sprayers* and *Mist Blowers*

DDT, technical grade	16 lbs.	35.0%
Xylol, industrial grade	16 qts.	62.5%
Triton, X-100	1 pt.	2.5%

These amounts will produce 5.4 gallons of cencentrate, with about 3.0 lbs. DDT per gallon.

Formulation C for *Mist Blowers*

DDT, technical grade	16 lbs.	26.0%
Xylol, industrial grade	16 qts.	48.0%
White oil, Acme	8 qts.	24.0%
Triton, X-100	1 pt.	2.0%

These amounts will produce 7.3 gallons of concentrate, with about 2.2 lbs. of DDT per gallon.

The emulsifier should be added to the mixture after the DDT is completely dissolved.

(Continued on page 15)

"Last Friday In April" Drive Is Success Five States Adopt Date

Connecticut's Governor Chester Bowles signs National Arbor Day Act April 1st, 1949. The State Committee and sponsors look on. L. to R. standing: Paul S. Walgren, Hartford; Ed Connell, Stamford; Joseph A. Dietrich, Chairman, Greenwich; Paul Walgren Jr., Hartford; Rep. Milo Mitchell and Rep. Daniel F. B. Hickey.

Nevada, March 9th; Connecticut, April 1st; New Jersey, April 13th; Maine and Indiana with no dates announced, make up the official list of states that have passed National Arbor Day Acts so far this year.

These five states with Massachusetts and South Dakota, where National Arbor Day Acts were passed two years ago, give us a very encouraging array of states. With this precedent to work on NAD committees should find the going easier at the next legislative sessions, two years hence.

Freeman L. Parr, chairman for New York, Hollis Howe, Maryland and Rufus Johnson, Utah, had their Acts successfully thru the legislatures but were vetoed by the governors. No explanation was forthcoming. In Michigan, Carl Fenner reports their Act has bogged down for this session, while similar reports come from Iowa and Pennsylvania.

In Illinois Noel Wysong reports favorably and expects to have good news shortly. The Ohio Act has been ding donging around in committee, but efforts are being made to rush it thru. We have hopes, altho rather slim.

All in all an excellent attack has been made in the first real effort and all who contributed have every reason to feel proud. This program to establish a uniform observance date thruout the country of Arbor Day, is basically sound. That it is sound, has been proven by the results to date and with the addition of fifteen more states, which should be possible in 1951, a beginning can be made on a national program. Such a program supported by radio, video, magazines and other media will quickly prove the contention that planting in the mind is sounder, more lasting and far more effective than a ground planting ceremony with no follow-up or plan.

The Virginia legislature meets next year and chairman H. M. Van Wormer has everything lined up ready to go. There may be other states with legislative sessions set for next year, however plans will be laid for 1950 and 1951 at a meeting to be called at the National Shade Tree Conference in Baltimore in August. All state chairmen are asked to attend and help work up plans both for another legislative assault and for the educational drive in the states observing National Arbor Day.

Freeman L. Parr, Chairman, New York Committee for National Arbor Day.

On April 13th New Jersey's Governor Driscoll signed the National Arbor Day Act culminating a successful drive by that state's NAD Committee: L. to R.; L. E. Anderson, Vice Chairman; Gov. Driscoll; Rep. Edward Terner, and Harry J. Banker, Chairman.

NAA NEWS

By PAUL E. TILFORD, *Secretary*
Box 426, Wooster, Ohio

New Oak Troubles

Some of our finest shade trees are the oaks. Almost every part of the country has one or more oak species which have been desirable, long-lived trees, relatively free of serious diseases and insect pests. In more recent years some new oak troubles have appeared.

Oak Wilt—A disease called Oak Wilt appeared in the middle west some 15 years ago and now occurs in Illinois, Iowa, Minnesota, Missouri and Wisconsin. It is the most serious disease of oaks in this country.

At the Twentieth National Shade Tree Conference, oak wilt was discussed by Dr. A. J. Riker of the University of Wisconsin and at last year's conference it was the subject of a paper by McNew and Young of Iowa State College. Oak Wilt—A Serious Disease in Iowa is the title of a recent Iowa Agricultural Experiment Station bulletin written by plant pathologist S. M. Dietz and Roy A. Young.

The authors of the Iowa bulletin report that 28 species of oak were inoculated with the fungus, *Chalara quercina,* which causes the disease and all 28 were susceptible. The oaks included in this experiment were: *Quercus alba, Q. borealis, Q. ellipsoidalis, Q. imbricaria, Q. macrocarpa, Q. marilandica, Q. muehlenbergii, Q. palustris, Q. velutina, Q. stellata, Q. coccinea, Q. falcata, Q. falcata* var. *pogodaefolia, Q. gambelii, Q. garryana, Q. hemisphaerica, Q. laevis, Q. laurifolia, Q. montana, Q. nigra, Q. phellos, Q. prinus, Q. robur, Q. shumardii, Q. shumardii* var. *texana, Q. suber,* and *Q. virginiana* var. *maritima.*

Naturally infected trees of the red oak group are killed quickly, usually within 30 to 60 days after symptoms first appear. White and bur oaks may survive for several years with only a few branches being killed each year.

It is recommended that "red oaks be removed as soon as the first symptoms of the disease are apparent. In removal fell the trees carefully to avoid injuring other oak trees and thus transmitting the disease. Peel the bark from the stump, burn all small branches and leaves, slab the logs and burn the slabs. The brush should be piled on the stump and burned, or if the stump cannot be burned without injury to other trees, the stump should be painted with creosote or oil. Care should be taken not to pile logs from diseased trees against the boles of healthy oak trees.

"White and bur oaks that show symptoms on only one or two isolated branches may often be saved by pruning or topping. If especial value is attached to a tree, the following procedure may be carried out. Remove the infected branch or branches at a point 3 to 4 feet (more, if possible without ruining the tree) below the most advanced symptoms, and burn all removed parts. Take care not to injure branches of other trees with infected branches. The tree should be examined periodically, and if further symptoms appear, either prune more severely or remove the tree."

Nematodes—A new disease of pin and red oaks at Wilmington, Delaware, is described in the March 15 Plant Disease Reporter. Approximately 50 to 60 per cent of the pin oaks in the city are said to be affected.

An extreme sensitivity to drought and chlorosis of the foliage are the first symptoms of the disease. These are followed by dying of leaf margins, similar to leaf scorch. This spreads inward finally involving the entire leaf blade. Unusual growth fissures occur on the trunk and in advanced cases there is excessive development of water sprouts. Callous growth over wounds on diseased trees is almost twice as rapid as on normal trees. The root hairs and fibrous roots of trees showing the top symptoms are killed.

The cause of this condition on oaks is not definitely known but large numbers of pathogenic nematodes have been found in the roots of diseased trees. Nematodes are very small eelworms which live in the soil. Most species are saprophytic but some attack the roots of many plants and cause serious diseases in some sections of the country.

Similar symptoms of this disease on oaks have been observed at Washington, D. C., and in Maryland, Pennsylvania and New Jersey.

One of the severely diseased Delaware trees made considerable recovery after a large amount of organic matter and fertilizer was incorporated into the soil, even though the nematodes were still present and feeding on the roots.

Pin Oak Sawfly—The pin oak sawfly is a relatively new oak insect reported on pin oaks in New Jersey in 1946. It has spread considerably from the area where it was first noted but so far as is known, it is still confined to the east. It has been identified as *Caliroa lineata* McG. and is closely related to the pear slug.

Dr. C. C. Hamilton has described the adults as "small, shiny black four-winged insects ¼ inch long. The larvae or 'slugs' are ⅜ to ½ inch long when full grown. The general body color is yellowish-green; the green down the middle of the body being due to green leaf tissues in the digestive tract." There are two or more broods of the insect a year. Both adults and larvae can be found from late May to September.

The larvae feed on the lower leaf sur-

(Continued on page 22)

NEW, MONEY-SAVING SPRAYERS

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(Potts-Spencer model)
Portable Concentrate Sprayers
Four big reasons—90-99% savings in water and spray volume; 75% in labor; 10-33% in toxicant; 2 to 5 times faster than usual methods. Sprays concentrated solutions in air-jet. Reaches topcenter of 35' trees—nearly 100' across gardens and low foliage. One tankful lasts nearly an hour. Easily operated and transported by one man. Skid model available for use from truck.
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Selection And Propagation Of Wilt-Resistant Mimosa Trees

By E. Richard Toole

Associate Pathologist, Division of Forest Pathology, Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture, in cooperation with Southeastern Forest Experiment Station, Forest Service, U.S.D.A., Asheville, N. C.

The mimosa or silktree *(Albizzia julibrissin)*, an introduced tree which has become naturalized in the southeastern States, is gaining in popularity as an ornamental because it is a small tree with graceful fern-like leaves and colorful flowers, and grows well on a wide variety of sites. However, this tree is threatened by a destructive vascular wilt caused by a fungus *(Fusarium oxysporum f. perniciosum)*. As a result of research carried on since 1939 by the Division of Forest Pathology, U. S. Department of Agriculture, mimosa trees resistant to mimosa wilt have been found. This resistance is not passed on to all progeny through the seeds, but wilt-resistant trees can be propagated readily from cuttings.

Intensive study of the disease revealed that the fungus occurs in soil and infects plants through their roots. It can live on dead organic matter, and it will remain alive for long periods in dry soil. It can be carried in the mud under car fenders, on people's shoes, and in many other ways. These characteristics of the disease make any direct attack on the fungus, such as spraying or eradication, ineffective; checking of infection by soil treatment is also difficult. Applications of lime, potash, and complete fertilizers at different strengths have had no noticeable effect on infection, but the use of soil fungicides or fumigants is promising.

In experiments with mimosa seedlings Fermate mixed at a rate of 100 pounds per acre into soil around seedings exposed to wilt produced beneficial results. Where Fermate was used, only 8 per cent of the seedlings wilted, while without this treatment 60 per cent of the mimosa seedlings under observation wilted within the same period. Some disadvantages of soil treatment are the possibility of occasional failure to get complete control, and the necessity of frequent treatments throughout the life of the tree. Nevertheless research work in soil treatment is being continued.

Photos courtesy the author

Seedlings grown from susceptible and wilt-resistant strains of mimosa. Two months after inoculation with the wilt fungus, all of the susceptible seedlings in the three rows on the left had died, while most of the resistant seedlings in the three rows on the right remained healthy.

Because of the disadvantages of other methods of control, it was decided that the mimosa wilt prolem could be solved most satisfactorily if it were possible to find and propagate wilt-resistant strains of the mimosa tree. Of the varied attacks on the problem, this one has yielded the most practical results so far.

The search for wilt-resistant mimosa trees was started in some of the heavily wilt-infested areas, but was without success for some time. Apparently healthy trees were occasionally observed in groups of wilted mimosa, but these became infected in later years. Therefore, it was necessary to test systematically seeds from a large number of mimosa trees for possible wilt-resistance. Accordingly, seed was collected from over 50 different mimosa trees from different localities from Maryland to Louisiana. Some 500 seedlings grown from this seed were inoculated with highly virulent strains of the wilt Fusarium. By the end of one growing season a few seedlings had survived. Additional seedlings

Rooted mimosa root cuttings from a wilt-resistant parent tree. Mimosa is easily propagated through the use of root cuttings.

(Continued on page 12)

The Arborists Clinic

OPERATOR SPRAYING EXPERIENCES FOR 1948

S. W. PARMENTER,
Arborist, Kent, Ohio

There certainly was plenty of confusion last year as to how much and what kind of these new spray materials to use.

Not having a mist blower, nor any desire to own one, all my experiences are with a hydraulic. In 1947 I had fine results with mosquito control using 2 pounds of 50-W (Du Pont) wettable DDT to 100 gallons of water. We sprayed as thoroughly as possible —lawns, shrubs, stone walls, cellar window walls and low branches of trees up to 12 or 15 feet. Out of six jobs—two had me do it again in three weeks because that was my estimate of its value—one said the control lasted the rest of the season. The other three went away for the summer and I had no check. However, the controls were apparently perfect. In one place we damaged small privet—foliage fell off but came back in about two weeks. In another place we caused a serious build-up of red mite in a hemlock hedge. I cleaned that up with Volck, nicotine, Crystal Oil Soap. The hedge looked all right in 1948.

In 1948 I was eager to spread the glad tidings to more mosquito sufferers so I sold about four times as much mosquito control as I had sold the year before and assured at least two weeks' control. Well, some Communist either equipped those mosquitoes with rubber boots or he got into the Du Pont plant and took one of the D's out of the DDT because the control had no resemblance to the year before. The moisture supply and number of mosquitoes present were as near alike as you ever see two seasons but the controls were not. I resprayed most of the places but I am satisfied that the only mosquitoes killed got their necks broken at the time of spraying.

Another new spray combination (to me) that I used last year was Vapotone and Volck on red spider and crawling stages of juniper scale and magnolia scale. And incidentally, I thought those magnolia scale would never come out. The main body of them didn't show up until just before election time. Maybe that is where Gallup got crossed up.

Much love and good wishes to you and your slim waisted fool-proof trees.

* * * *

KARL AMALIA,
Amalia Tree Surgeons, Incorporated
Manchester, N. H.

Glad to hear you are trying to clarify the use of formulas for mist blowers. We use Shell products exclusively. Vapona, which was very, very safe (vegetable oil), was not effective (DDT content less than 3 per cent too low). We used a 25 per cent DDT emulsoin and diluted as they recommended. We use 4 gallons to 100 in most blowers.

We had some injuries on elms on the lower part of the tree where there was heavy drip. We have found that lilac and privet are very sensitive to any type of DDT spray. Oftentimes they would shed as much as 50 per cent of their leaves. One has to be careful in hot weather when the temperature is above 85. You are apt to get burning. For general usage in hydraulic rigs, we use 2 pounds of 50 per cent Niagara wettable per 100 gallons. We found this very safe and effective. We cannot spray evergreens with DDT. The red spider population builds up something fierce.

The mist blowers for the control of mosquitoes—we have found it advisable at times to increase the solution to 10 per cent. We have had exceptional results in most places while in other places we had no control. This is due to local conditions. The thing operators are not stressing when they are selling their work is that you can't control the flight of mosquito and flies in "SPACE." You can oftentimes spray a place and at a later date the place will have a high population of flies or mosquitoes. It may take them a day or two before they die! This is not being explained to the clients! I found that one place (a dairy) had been sprayed two years previously but the third year's spray had not been effective. They seemed completely resistant, even to high concentrations of DDT. We then use Benzine Hexachloride.

* * * *

ED. W. HIGGINS,
The Frost & Higgins Co.,
Arlington, Mass.

We operated with four different types of machines and I am setting them forth in the order.

On hydraulic sprayers we used 50% Wettable DDT—2 lbs. to the 100 gals. In some cases we also included 2 lbs. of arsenate of lead because that would make a carry over for leaf eating insects for a longer period. We also used Shell Resitox D25—1 qt. to 100 gals. of water.

On the blowers we used Shell D6 and D12 DDT Mistonas for early and regular foliage sprays. For Japanese Beetle we used Shell Vapona D43 on shrubs and any other plants which would be injured by the Mistonas. The Mistonas were the materials used in the greatest volume.

We also used for fruit tree spraying the sulphurs included with arsenate of lead and where aphids were present nicotine sulphate.

For Red Spider on hedges we used sulphur, and derris with very good success in the hydraulic sprayer.

For anthracnose we substituted for sulphur, bordeaux mixture.

That about completes our spraying schedule. We are changing some of these mixtures this year somewhat on recommendations of the University of Mass. Experiment Stations.

* * * *

JOHN Z. DULING,
Muncie Tree Surgery Co., Muncie, Ind.

In reply to your letter of February 23, 1949, asking for our experiences in spraying last year, due to our not having a mist blower through the season our experiences were with hydraulic sprayers.

In the dormant sprays we used 6% scalecide solution for scale clean up, and in delayed dormants, we used 5% and 4% solutions of B. G. Pratt's scalecide.

Using Dow 50 wettable DDT we sprayed summer foliage sprays for leaf eating insects and some fly control. Later we used Shell resitox D-25 at 1 qt. per 100 gallon for fly and mosquito control in shrubs and for garden parties.

Having an outbreak of cottony maple scale, we sprayed in July at hatching of the mites, with a spray of summer spray cream and DX with 5% DDT. We did not do any spraying for either of the elm diseases as it was not prevalent in the area. However, we plan to start a control program on elms this year, hoping to beat the insects to the draw.

We are sure the April issue of Trees will be very interesting and we look forward to it. We are sorry our experiences are not greater to give you a better story.

* * * *

LESLIE MAYNE
Arborist
San Mateo, Calif.

Thank you for your letter of February 23rd, concerning spray formulas.

Our only experience is with hydraulic equipment and we have not used any unusual formulas. For caterpillar control on oaks, we have been using a DDT combination called Residol, a Shell product, at the rate of 1½ gallons per 100 gallons of water. We like it because it leaves no visible residue so that we do not have the washing down of shrubs except in the case of camelias and rhododendruns. For elm leaf beetle, we have been using 3 lbs. of standard lead Arsenate, plus 2 lbs. 50 per cent wettable DDT powder, plus 1/3 lb. fluxite casein spreader per 100 gallons of water.

Concerning our general summer sprays, we have been staying with 2½ per cent summer oil solutions, using Arboral, a California Spray Chemical product, plus the addition of Pyrethrum Rotenone extract called Botano Liquid Spray, a California Spray Chemical product, at the rate of 1 to 600 for the control of thrip and aphis scale.

On our dormant oil spraying, we have been using a California Spray Chemical product called Kleenup Flowable Emulsion at 5%. This we have used on our dormant fruit trees as a clean-up; on sycamores for sycamore leaf scale control and on deciduous oaks for oak pit scale control. We practically do not apply any fungicidal sprays on our shade trees and only use full strength Bordeaux on our stone fruits. We have recently purchased Isotox, a benzene hexachloride, which we intend to try out for aphis control on such trees as Birches, etc.

We have been using Chlordane wettable at the rate of 5 lbs. per 100 gallons of water for Ant control with a marked success. Our method is to apply about 30 gallons of dilute solution on a lot of 5,000 square feet with a house on it. We spray around the fence, bulk heads, foundation and very light spray over the ground area, except where the spray would show on foliage or flowers.

I trust this letter will be of some help to you. How about coming out to the Western Shade Tree Conference in May?

* * * *

L. FLETCHER PROUTY
Asst. Supt. of Parks
Springfield, Mass.

I am ashamed! Actually I have not had time to get together the data which you wanted before March 10.

It seems that you must be a wizard to accomplish all that you do. My job keeps me going not 40 hours a week but 24 hours a day almost every day in the week.

This year we sprayed with two types of

(Continued on page 21)

For News About The Farquhar Iron Age Mist Sprayer See Back Cover

All sizes of Lag Bits, Ship Augers and Extra Long Bits, now in stock. Also all sizes of Greenlee Chisels and Gouges, Burr Cavity Slicks, Mallets and Brass Drain Tubing. Our Summer Grade Tree Paint has been improved, thick enough for use in hottest weather.

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Mimosa Wilt

(Continued from page 10)

were grown from the four parent trees that yielded the most resistant trees in this test, and again some seedlings survived inoculation with the fungus. Twenty of these seedlings have remained alive and vigorous for eight years despite repeated inoculation, while Fusarium wilt killed neighboring volunteers. Although several hundred younger resistant mimosa seedlings have been selected through the testing of over a thousand seedlings, these 20 original trees have served as the resistant parents in the later propagation work.

Propagation of the resistant mimosa stock through the use of seed was attempted. Some of the resistant trees yielded seed for the first time when they were six years old. With seed available, it was possible to discover whether the resistance factor was passed on to all of the seedlings by the female parent. Tests of nearly a thousand seedlings over a period of several years showed that only about 50 per cent of these seedlings were resistant. Therefore, it was necessary to return to the principle of cuttings as the most feasible way of producing stock that runs true to type.

Attempts were made to propagate mimosa by hardwood stem cuttings, greenwood stem cuttings, and root cuttings. The first experiments were with hardwood stem cuttings from random wildling mimosa. Shoots several feet long were cut from young vigorous trees in March, 1945. Soon after collection the shoots were made into cuttings about eight inches long. Twelve cuttings were available for each six treatments. These treatments included 20-hour dips in indolebutyric acid and napthaleneacetic acid at rates of 40 and 500 parts per million, 2, 4-D for 1 hour at a rate of 50 p.p.m., and no treatment. The upper ends of 6 cuttings in each treatment were dipped in wax, while the other 6 were not waxed. At the end of the treatment period all cuttings were rinsed in tap water and planted in moist sand in flats in the greenhouse.

Four months after planting all cuttings were dug and examined. Cuttings that had not rooted had died by this time. The only cuttings that had roots were some of those treated with indolebutyric acid at 40 p.p.m., naphthaleneacetic acid at 40 p.p.m., and 2, 4-D at 50 p.p.m. In only one case did any rooting occur in cuttings less than .3-inch in diameter. All of the larger top-waxed cuttings treated with indolebutyric acid at 40 p.p.m. rooted, whereas only 50 per cent of the unwaxed cuttings rooted when treated similarly. Accordingly, the following year cuttings from resistant trees and nearby wildling mimosas were col-

(Continued on page 16)

John BEAN Shade Tree Equipment

Rotomist (above) is readily mounted on light truck. It gives you better shade tree protection; saves material; cuts manpower; makes light work of what were formerly tough jobs handling spray guns.

Effective Insect Pest Control

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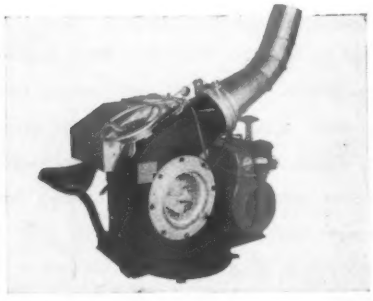

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DED Report

(Continued from page 7)

The amount of concentrate indicated should be added to the spray tank partly filled with water and then stirred while enough additional water is added to make 100 gallons of spray. If a spider mite problem exists, mix ½ gallon of white oil with this amount (*) of concentrate before it is put in the spray tank.

Applications by Hydraulic Sprayers

High pressure and volume sprayer, hose and gun are required for spraying large elms. Pumps and guns that deliver about 50 gallons of spray at 600 pounds pressure have performed satisfactorily. In general, DDT solvents damage natural rubber and many synthetic materials. Neoprene gaskets and hose have stood up better than others tested.

A special effort must be made to get a heavy coating of DDT on the twigs in the tops of tall elms. The light fog which may drift to the tree top will not deposit enough DDT for bark beetle control. A heavy mist that reaches all of the tree crown is necessary. Twenty-five to thirty gallons of prefoliar spray, containing at least four pounds of DDT, may be required for the average large-crown, 50-foot elm. Taller elms, even with the same crown size, will require additional gallonage for adequate top coverage. Most of the spray should be directed at the top of the tree, and then at the lower crown and trunk until all the bark area is covered. Spraying from three or four positions, and an observer to direct the nozzle-man, are recommended. Failure to cover adequately all parts of a tree may permit it to become infected by Dutch elm disease.

Applications by Mist Blowers

Field tests have demonstrated that bark beetle control sprays can be applied satisfactorily with a mist blower. The negligible disturbance of traffic and other activities in the work area, and a reduction in visible spray residues and possible plant injury from dripping, favor the use of a mist blower. Tall elms have been treated by blowers with an output of 7500 to 8000 cubic feet of air per minute through a 10 to 12-inch outlet at an air velocity of at least 120 miles per hour. The insecticide should be introduced under pressure into the air stream at the rate of one to four gallons per minute, broken into droplets with a mean size of 40 micron, and uniformly distributed in the airstream. Highly volatile solvents may contribute to poor deposits of DDT and slowly volatile solvents may cause plant injury.

Better coverage with a given amount of material can be secured by establishing a column of moving air to the tree-tops before introducing the insecticide into the airstream. The material should be applied from at least three sides of the tree. The operator should be guided by an observer stationed some distance from the tree to assure adequate coverage of all parts of the tree. Blasting or wetting any part of a tree with a mist blower will surely result in plant injury. For prefoliar coverage, an elm 24 inches in diamefer or a full-crown, 50-foot elm may require three to four gallons of spray containing three to four pounds of DDT. More dilute sprays should be used for foliage spraying.

The Timing of Bark Beetle Control Sprays

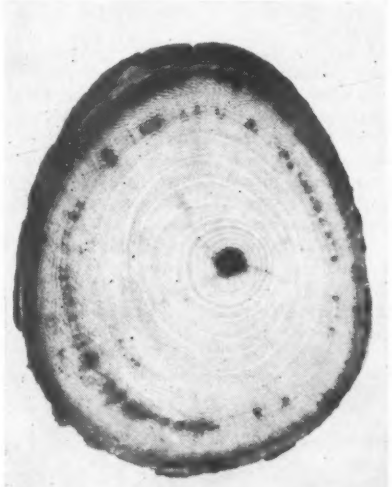
For the best coverage, the first DDT should be applied in early spring before the elms come into leaf. By this schedule, the DDT will be on the elms when the first bark beetles become active. To prevent bark beetle feeding throughout the summer, the elms should be sprayed again in July. Because the spring and early summer feeding by bark beetles is more likely to result in infection, the early spray is considered more important.

Dead and dying elms which cannot be removed promptly, should be sprayed thoroughly and heavily in April or May, and again in July to prevent bark beetle reproduction in their trunks and branches.

In the Case of a Limited Budget

The meaning of the term "Dutch Elm Disease Control" may vary from saving nearly all the elms in an area to losing just less than the number that would be lost in the absence of control measures. Perfect control is probably impossible under most existing conditions. The consequence of two little control may be disastrous. The practical answer is somewhere between, depending on many factors at the site.

(Continued on page 18)



Discoloration in springwood water vessels caused by Dutch elm disease.

Use

Bartlett Saws

No. 124B—24" Special Fast Cutting Utility Saw

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No. 114—26" Rapid Cut Saw (Snap Extra)

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Write now for details and complete catalog.

TREE SURGERY SUPPLIES

TRADE MARK REG. U.S. PAT. OFF. COMPOUND

Bartlett Mfg. Co.
3028 E. Grand Blvd.
DETROIT, MICH.

Mimosa Wilt

(Continued from page 12)

lected and given the wax and indolebutyric acid treatment. The results of this experiment were rather disappointing—only 4 per cent of the cuttings from one resistant tree rooted, 50 per cent from another, and none from 4 others. Seventy-five per cent of the cuttings from 5 of the 6 wildling mimosas rooted.

Further experiments with hardwood stem cuttings of mimosa were carried out with the hope that a reliable method could be discovered. Several growth regulators at different concentrations and under various treatment conditions were tested on cuttings from a number of resistant trees. It was found that cuttings should be collected in February or March and planted at once. Of the hormone treatments tried, indolebutyric acid at a rate of 200 p.p.m. for 24 hours was the best. However, even with the best treatment, rooting varies greatly between individual trees. Cuttings from one resistant tree rooted 87 per cent while those from another rooted less than 50 per cent. This variability between individual trees is one great disadvantage with hardwood stem cuttings from mimosa which has not been overcome so far.

Although a number of attempts to root greenwood stem cuttings were made, these were complete failures except where the cutting arose as a sprout directly from a root. Greenwood cuttings collected from root sprouts rooted 75 to 100 per cent. This method has been used to some extent, particularly along with cuttings from the roots themselves.

Root cuttings have given by far the best results and can be used to propagate resistant stock in quantity. Roots were collected in March and made into cuttings about 3 inches long. They were then planted vertically in flats of vermiculite in the greenhouse so that about ¼-inch of the top was above the medium. Some cuttings were treated with Rotone, others with indolebutyric acid, and the rest left untreated. Hormone treatment had little effect on the rooting of root pieces. However, diameter of cutting appeared very important. Cuttings .3-inch or over in diameter rooted 70 to 100 per cent, while smaller cuttings rooted from 19 to 79 per cent. In other experiments where the rooting of root cuttings planted with the top above and below the medium was compared, it was found that when the tops were buried, only 20 per cent of the cuttings rooted, while when the tops were above the medium, cuttings rooted 99 to 100 per cent.

In order to test the rooting of root cuttings set directly in the field, 1800 cuttings from both resistant and susceptible trees were planted in the mimosa experimental nursery at Tryon, N. C., in March, 1948. Cuttings .3-inch in diameter or over rooted from 6 to 100 per cent, depending on the parent tree.

The above experiments show that mimosa can be propagated vegetatively from root cuttings with very little difficulty. Cuttings from the original 20 resistant parents have remained healthy after being twice tested by inoculation with highly virulent strains of mimosa wilt fungus, and after having been planted in naturally wilt-infested soil.

At the present time the resistant stock is being further tested in small plantings in various localities throughout the southeast. The stock is being increased in a U. S. Department of Agriculture nursery at Tryon, N. C., and it is hoped that in a few years resistant trees will be available through commercial channels. So far, the oldest propagated wilt-resistant trees from seedling stock, now 8 years old, have been without exception immune to the wilt.

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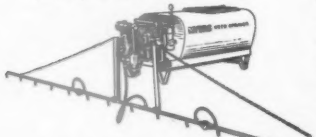
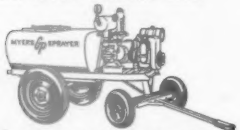
TREE SPRAYING

Wheel and skid type sprayers; capacities up to 50 gpm; pressures up to 800 lbs.



New Weed Sprayer. 60 lbs. pressure. 21-foot adjustable boom.



New General Purpose Sprayer. Wheel and skid types for gun and boom use. Capacity, 7 gpm; pressures up to 400 lbs.

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See the many different types of Myers Gun Sprayers — the powerful, efficient Bulldozer Pumps and other advanced features built into Myers '49 Sprayers. Mail coupon for free catalog and dealer's name *today*.

THE F. E. MYERS & BRO. CO.
Dept. N-193, Ashland, Ohio
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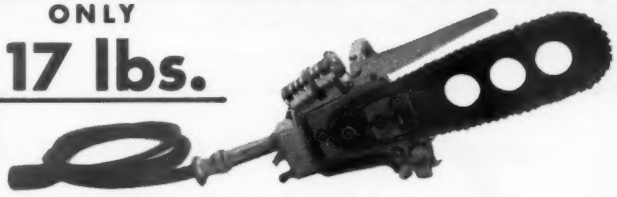
FEATHERWEIGHT

One Man Electric Chain Saw

ONLY **17 lbs.**



Complete with a 14 inch Blade and Chain

It's the height of efficiency for off-the-ground cutting

First, feel the heft of it . . . only 17 pounds . . . perfect for working up in trees. Yes, by all means, feel the cut of it . . . the *fast, smooth* cut of it.

Built with a narrower kerf and simpler design, this new, featherweight, high-cycle, Homelite Chain Saw requires less power to operate. Therefore it cuts faster. Moreover, binding and chattering are eliminated . . . the life of the chain is greatly increased.

Built for every-day, continuous service, Homelite's newest addition to its chain saw family is the last word in safety, simplicity and economical operation. No brushes or commutator to replace or repair. No clutch to adjust. No servicing except periodic cleaning and lubricating.

Powered by a Homelite Carryable Dual-Purpose Generator

This new 17 pound chain saw, like the other larger Homelite Electric Chain Saws, operates from a Homelite gasoline-engine-driven-Generator that provides plenty of power for not only high-cycle tools, but also standard 110 volt electric tools and floodlights as well.

Write, right now, for complete information.

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PORT CHESTER, N. Y.

MANUFACTURERS OF HOMELITE CARRYABLE PUMPS • GENERATORS • BLOWERS • CHAIN SAWS

DED Report

(Continued from page 15)

Period of Spraying, Concentration of Spray and Type of Applicator	Gallons of Concentrate to Make 100 Gallons Spray		
	Formulation A	Formulation B	Formulation C
Prefoliar spray (about 2%) for *hydraulic* applications	4½ gals.	5½ gals.	....
Foliar spray (about 1%) for *hydraulic* applications	2¼ gals.*	2¾ gals.*	....
Prefoliar sprays (about 12%) for *mist blower* applications	....	34 gals.	45 gals.
Foliar sprays (about 6%) for *mist blower* applications	....	17 gals.	22½ gals.

7 FEATURES of the NEW LOMBARD MODEL 7 MASTER SAW with the FAMOUS WARREN HIGH SPEED CHAIN

1. Additional power from the dependable Homelite motor. New lighter-weight saw, magnesium alloy construction.
2. Completely automatic chain oiler. Feeds chain with constant stream of oil when transmission shaft is turning.
3. Fully automatic clutch, eliminating usual manual controls.
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6. Cutter Bar reversible top and bottom and end to end.
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Available in 24, 36 and 48" sizes.

Warren High Speed Chains now available for other make saws.

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MODEL 4 - 4 H.P. - 19" ONE MAN SAW
Weighs only 38 lbs.....$345.00

MODEL 42 - 30" ONE MAN—TWO MAN
A completely engineered Two-Man Saw with idler and Helpers End, not just a helpers end attachment. Helpers End is quickly detachable.
Weighs only 44 lbs.....$375.00
(Prices slightly higher West of the Rockies)

Dealer opportunity in some areas.

LOMBARD GOVERNOR CORP.
ASHLAND, MASSACHUSETTS

The degree of Dutch elm disease control resulting from sanitation work is probably in relation to the amount of work done providing it is reasonably thorough and timely. Winter and spring clean-up work is probably more important than summer work. If the entire job cannot be done on time, attention should be given to the clean-up of recently dead or cut elm wood on the ground because the job is inexpensive if done cooperatively, and the material is a distinct menace if allowed to produce bark beetles. Next, attention should be given to recently dead and dying elm trees. Removal costs are high, but thorough wetting with a 1% DDT emulsion is relatively inexpensive. Such treatment may provide a public means of preventing dead elms on private property causing extensive damage to nearby public trees.

DDT spraying for bark beetle control which does not meet certain standards must be considered a waste of money and effort. The cost of adequate DDT sprays for bark beetle control on a few valuable elms may be within bounds. However, the cost of five to six pounds of formulated DDT and two sprayings on each of many thousand valuable elms in a city may be over budget limits. In such cases, it is better to apply an adequate prefoliar spray to the valuable elms which are under definite threat than to do a half-way, town-wide job. If one expects to control leaf feeders only, there is no advantage in applying more DDT than the small amount required to control leaf feeders. It must be recognized that small amounts of DDT will not control bark beetles. Certainly some DDT should be reserved for the treatment of elm wood piles and dead elms as they are encountered during the summer.

Effects of DDT on Other Insects and Mites

Canker worm, gypsy moth, tussock moth and elm leaf beetle feeding may be controlled by pre-foliar, bark-beetle control sprays. Because of the nature and habits of these insects, and their

relatively short period of abundance, they can be controlled with amounts of DDT far less than that required to prevent bark beetle feeding. Such a spray is often advisable when heavy prefoliar sprays have not been applied. Japanese beetle feeding can also be controlled with DDT applied at the time of feeding.

Spider mites (red spiders) may build up to damaging numbers on elms that have had repeated applications of DDT during the foliar period. Mite conditions in a spray area should be studied before mid-summer foliage spraying is started so that a miticide can be added to the spray if mite damage is threatened. These secondary pests can be controlled by adding Acme white oil or its equivalent to the emulsifiable concentrate (Formulations A and B) suggested for use in hydraulic sprayers. One-half gallon of the white oil should be mixed thoroughly with the volume of concentrate required to make 100 gallons of 1% DDT emulsion. Formulation C contains sufficient white oil for mite control when applied to elm foliage by mist blower as a 6% emulsion.

Precautions in Using DDT and its Solvents

No lasting injury attributable to DDT or its solvents has been experienced by operators using DDT sprays in much the same manner they would use other insecticides. No significant injury to domestic and wild animals has been observed at spraying sites where ordinarily acceptable spraying practices were used. *Nevertheless, the possibility that damage may result from improper handling and over-spraying with DDT and its solvents should be recognized.*

The flash point of benzol is very low and that of xylol is moderately low. Smoking and other practices which might ignite the vapors from such solvents must be avoided. Vapors from these and possibly other solvents may cause some workers to experience headaches and nausea, and irritation in the eyes, nose and mouth. When inhaled in excessive amounts, the vapors are extremely dangerous. Precautions against such discomforts, as well as against fires, are most important for workers engaged in making and handling concentrated solutions and emulsions.

The one and two per cent emulsions will cause burning of the eyes and mucous membranes if not washed away promptly. Inasmuch as DDT in oil solutions and emulsions can be absorbed through the skin, excessive and prolonged exposures to such sprays should be avoided or they should be washed off before they dry.

Spraying should not be done where

(Continued on page 21)

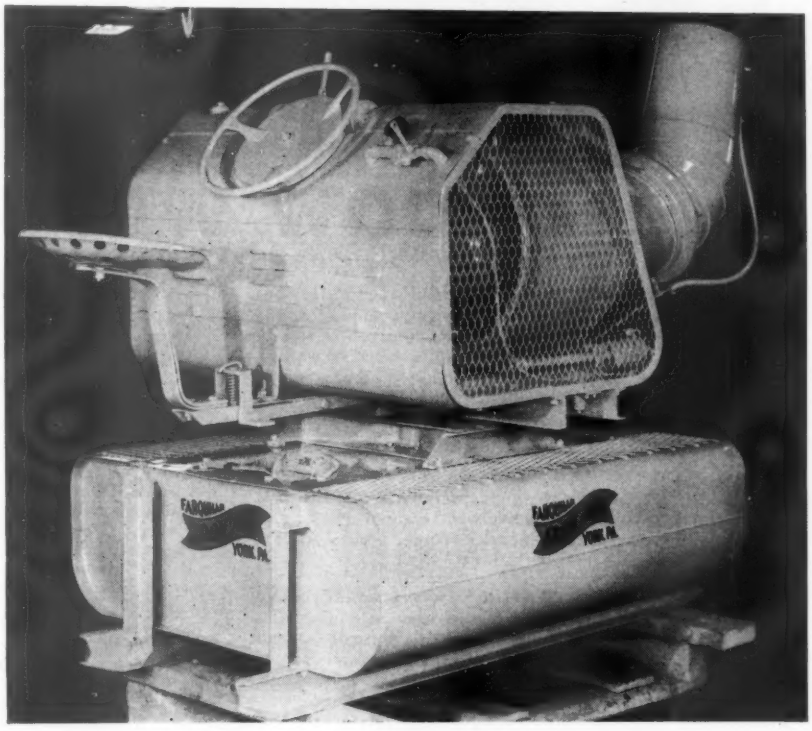
Farquhar Presents

POWER PLUS

In A Completely New Iron Age Mist Sprayer

Engine, Blower and Operator Revolve
New 100-gallon tank is Stationary
Up to 160 m.p.h. air velocity—if you need it
Still Fits in a Pickup Truck

A Worthy "Big Brother" of the Orchardair



Data on New Iron Age Mist Sprayer

Air Volume (throttle controlled)—6,000 to 12,000 cu. ft. per minute

Air Velocity—90 to 160 m.p.h.
Air Outlet—11"
Engine—22 h.p. V. E. 4 Wisconsin
Weight—1000 lbs.
Stationary Tank Capacity—100 gallons
Tank dimensions—14" high; 48" wide, 52" long.

Price: $1670.00 F.O.B. York, Pa.

MIDWEST MIST SPRAYER CO.

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Use the right DOW WEED KILLER

ESTERON BRUSH KILLER A powerful weed killer containing equal amounts of the isopropyl ester of 2, 4-D and 245-T acid especially for use in controlling woody and herbaceous plants including alder, birch, brambles, elm, hickory, osage orange and many other species. Assures satisfactory control of most troublesome species on the average right-of-way. Available in 50-gal. drums and 5-gal. cans.

2-4 DOW WEED KILLER, FORMULA 40 A superior liquid amine salt formulation especially suitable for low volume spraying for selective weed control on turf and in crops. Does not clog nozzles. 1-gal., 5-gal., 30-gal., and 50-gal. sizes.

SODIUM TCA 60% Dow's newest vegetation control agent for killing grasses. Can be used in conjunction with the above Dow Weed Killers for control of both perennial grasses and weeds. Label recommendations should be followed. 375-lb. drum, 100-lb. lever pack, 50-lb. fiber pack sizes.

Highway departments and right-of-way maintenance crews rely on Dow weed killers to destroy tough, stubborn weeds and woody growths. Here's why: When the *right* Dow weed killer is selected and *properly* used—better results are obtained—time and money are saved—and soil erosion problems due to killing of grasses are avoided.

Years of research by The Dow Chemical Company in cooperation with federal and state authorities have shown that the *right* weed killer will meet almost any weed problem. Each of these superior Dow products has been PROVED by field and commercial usage.

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GRAIN AND SOIL FUMIGANTS • WOOD PRESERVATIVE

Flash!! — Ohio Arborist Bill Defeated, 37 - 41

DED Report

(Continued from page 19)

the drip or drift will cover vegetation for human or animal consumption.

DDT by itself is not known to be toxic to American elms and most other trees and shrubs likely to be covered during shade tree spray operations. However, some of the solvents and emulsifiers, when used improperly and excessively, may cause injury to various kinds of vegetation. Such factors as new foliage, varietal sensitivity to oils, slow rate of drying, and mechanical spraying injury contribute to the likelihood of injury.

Summary

The conferences emphasize that Dutch elm disease control measures should be based on the actual or potential seriousness of the disease and its bark beetle carriers in the area.

In disease-free and in lightly infected areas, sanitation measures are of primary importance, and spraying to control bark beetle feeding is rarely justified. An adequate sanitation program should include the removal and destruction or DDT treatment of bark beetle material. Thorough work should be done within a distance of at least 500 to 1000 feet of the elms to be protected, the distance depending on the amount of bark beetle material and the value of the elms in the area.

In heavily infected areas, sanitation work is also of first importance, and a particular effort should be made to extend the thorough work over as large an area as practicable. Special DDT sprays to control bark beetle feeding should be used to protect valuable elms which are jeopardized because of inadequate sanitation in areas where such work is largely impossible. Such spraying to give added protection to unusually valuable elms may be justified. Only special DDT formulations, such as those given in this report, should be used at the strengths and dosages suggested for bark beetle control.

The precautions noted above should be carefully observed so as to reduce the possibility of injury to elms and the chances of personal and property damage.

Arborists Clinic

(Continued from page 11)

blowers—Accurate Tool and Buffalo. There were 60,000 Elms covered — some three sprayings.

The outside city was sprayed by the Buffalo because the trees were from 30-50 feet. The center and older section of the city where the trees reach 110 feet were sprayed with the Accurate Tool because of its capacity to produce volume and height. It cannot overcome the wind but can be used to advantage on breezy days when we depend on the wind to drift the spray into otherwise inaccessible places.

The D.D.T. used—

1 quart Xylene

3 quarts #2 Fuel Oil

12% solution

Accurate Tool Standard 25 emulsion reduced to 6% 100 lbs. D.D.T., also Tryton and 25 gal. Sunsolvent reduced to 6%. Gulf reduced with water 2 to 6%.

Results: 113 trees died in season of '48. So far with six men scouting the whole city completely, 29 in 1949.

J. A. DIETRICH,
Supt. Div. of Parks and Trees
Greenwich, Conn.

The additional information you requested, in regards to the Spray Report, is contained herein.

Formulas:

Due to the supervision required and additional cost of labor in mixing DDT formulations as well as damage resulting from poor materials improperly formulated, I decided on the use of commercially prepared products throughout our entire program.

Dormant Elm Bark Beetle Spray

(1) *Shell Resitox D*-25. Emulsifiable DDT concentrate contains 25% (by weight) DDT, approximately two pounds of DDT per gallon. It has a refined aromatic derivative of petroleum as a liquid base and a Shell solvent. It was used as a dormant spray by the Tree Department at the rate of 20 gals of 25% Resitox to 20 gals. of water in a Mist Blower.

(2) *Shell Mistona D*-12. Contains 12% DDT. This product was used at full strength, also as a dormant application in a Mist Blower.

Regarding your inquiry as to Group "A," Test jar No. 1, Healthy Twigs. Perhaps this is confusing, I would appreciate your changing that as it appears in the report to "Unsprayed Twigs" or "Checks" as you mentioned. (See story on page —.)

Ed, it's pretty difficult to establish a comparison between towns insofar as town or city trees are concerned because of an absence of records.

I will say, however, that much good has been done by the interest and support of the citizens in Greenwich, as private landowners, to remove sources of infection and protect their trees by working with the commercial men on recommended methods of control and eradication.

Our Town Fathers have seen fit to appropriate funds for private removals where sources of infection on private property are within 500 feet of town owned elm trees. This is done with property owners' permission only after it has been decided that they are unable financially or otherwise to remove the trees in any other way. This does permit us additional protection as far as town elms are concerned.

Ohio Arborists July 1st

The Ohio section of the National Shade Tree Conference will hold a one day summer meeting in Cleveland, July 1st.

The meeting will convene in the Cleveland Garden Center, Euclid and E. 105th St. (Wade Park) at 9:00 a. m., with Paul Tilford, Charlie Irish and Louie Chadwick kicking off. A tour will include a visit to the growing grounds of the Division of Shade Trees, Lakeview Cemetery and Nela Park with lunch at the General Electric showplace.

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COMPLETE LINE OF METAL & WOOD CUTTING TOOLS

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SOMERVILLE 43, MASS.

Magnolia Mildew in South

In an article, "Powdery Mildew of Oriental Magnolias," in the Plant Disease Reporter for April 15, D. L. Gill says that the division of mycology and disease survey of the United States Department of Agriculture answered an inquiry about the occurrence of powdery mildew on these magnolia species with the statement that the division had no record of occurrence on M. soulangeana and variety lennei, nor on M. stellata. Perithecia were found in late October, 1946, and the fungus was tentatively identified as Microsphaera alni. Verification was made by John A. Stevenson, of the division of mycology and disease survey, in 1947.

During the past three years a powdery mildew of Oriental magnolia species has been observed in nurseries in the vicinity of Mobile, Ala. The disease is severe and almost universal in occurrence on leaves of Magnolia liliflora and M. liliflora variety nigra. It is much less severe on M. soulangeana and its varieties alba superba, alexandrina, lennei and rustica. Often no infection can be found on M. soulangeana growing beside M. liliflora which is severely affected.

Nurserymen use copper sprays, usually Bordeaux mixture, to control the disease. Zerlate, one and one-half pounds to 100 gallons, did not produce as good control as Copper A, four pounds to 100 gallons, applied to plants in adjoining beds. Sulphur has caused severe burning of the foliage on two occasions when applied by Mr. Gill and at least once when applied by a nurseryman. These cases of injury were not correlated with high temperatures.

NAA News

(Continued from page 9)

faces, eating away all the tissues except the upper epidermis and the network of leaf veins. The injured leaves turn brown. Feeding by the insect usually starts in the tops of trees but finally may extend to leaves over the entire tree.

Three pounds of lead arsenate to 100 gallons of water plus a sticker is reported to give good control if the underneath sides of the leaves are thoroughly sprayed. Two pounds of 50 per cent wettable DDT to 100 gallons applied with a hydraulic sprayer, or 5 per cent DDT emulsion put on with a mist blower also have controlled the sawfly. DDT gives better control than arsenate of lead since it is effective against both the adults and larvae.

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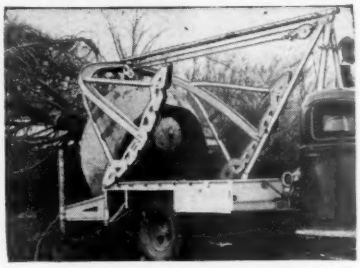
New Rocker Mover Handles Big Trees Easily



Quickly installed on any truck, this patented tree mover rocks back for easy loading or unloading . . . rocks forward for balanced load on truck. Power winch does the work. Handles up to 7-ft. ball, 5 tons. Two sizes available. Hundreds in use. Write for details.
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CHAIN SAWS
Now Equipped with Recoil Starter

Sturdy Dependable

Model 10
BOW CHAIN SAW
Available in 18, 24, 32" Capacities

Model 10
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Available in 18, 24, 36, 48" Capacities

Easier to start, easier to use, faster cutting, these powerful chain saws have every essential construction and performance feature to make tree felling, bucking and limbing easier and more profitable. Both saws have 2-cycle gasoline engine, stall-proof clutch. Model 10 Chain Saw has detachable tailstock handle, also round nose bucking bar which is interchangeable with Bow Saw Attachment on engine. Write at once for FREE demonstration, prices and name of nearest dealer.

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A few moments to saw this off

LIGHT WEIGHT TWO-MAN

Here's the Two-Man light weight saw everyone has been waiting for. Combines convenient two-man handling with minimum exertion in cutting bigger trees. New type Chisel Chain (with 30" Rail) makes large felling easy, even on hillsides. Remove handle and you have an efficient One-Man bucking bar. Available with 24" as well as 30" Guide Rail.

Get this done in a minute or less

EXTRA-DUTY TWO-MAN

The saw that handles the big ones right in stride. Full 12 h.p. Toughest ripping and cross-cutting are easy with new self-feeding Chisel Chain—automatically lubricated to save wear. 2′ to 7′ Guide Rails all quickly interchangeable anywhere. Bucking bar attachment available.

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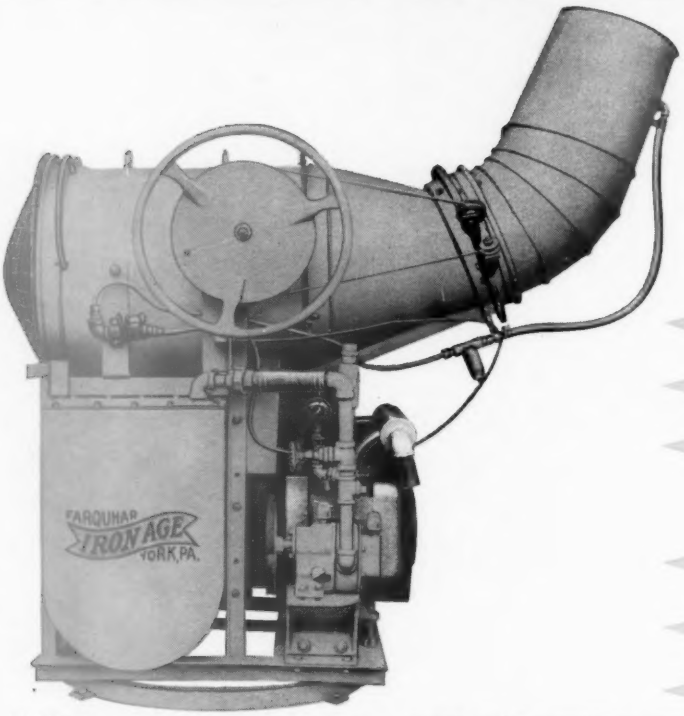

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Compact and lightweight

Adaptable for small trucks

NOW you can get greater efficiency in the use of power, materials, labor and equipment with the *new* Farquhar *Iron Age* Mist Sprayer. Never before has a mist sprayer been developed that weighs so little, yet accomplishes so much!

Powerful solid cast aluminum axis flow fan delivering air at 87% efficiency, makes it possible to use a 10-horsepower engine operating at *half* throttle. This means extra savings on fuel and maintenance! The new, efficient spray jets, which meter just the proper amount of mix to the air flow, conserve your mixtures . . . give you *all* of the savings this new and radical method of spraying promises.

The new *Iron Age* Mist Sprayer is light enough to be mounted on small trucks, jeeps and boats; brings Mist Spray effectiveness to inaccessible out-of-the-way places that could not be reached before. To take advantage of wind currents, *Iron Age* Mist Sprayer can be rotated in a circle for full coverage, or can be locked in any position while your vehicle moves along the work to be sprayed.

Powerful 90-100 mph air blast insures full penetration without defoliaging. Gets all the spray where it's needed without waste. Spray jets can be changed in 30 seconds for proper gallons per hour or droplet size for the type of job to be done.

Complete misting of concentrate, either in oil or water, is attained by injecting mix into center of high velocity air stream, minimizing tendency of droplets to merge. Thus extremely fine particles, *plus* proper air-blast speed offer effective coverage.

Get the facts—check the time and work-saving features it offers for effective shade tree, fly and mosquito control, and estate work. For full information write today to:

A. B. FARQUHAR COMPANY
3522 Duke Street, York, Pennsylvania

***FARQUHAR IRON AGE MIST SPRAYER**

Successor to "Orchardair," formerly manufactured by Greenfield Sprayer Co., Greenfield, Mass.

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